

REMARKS

Claims 1 through 40 are currently pending in the application.

This amendment is in response to the Office Action of December 15, 2005.

35 U.S.C. § 103(a) Obviousness Rejections

Obviousness Rejection Based on Aronowitz et al. (U.S. Patent 6,033,998) taken with Mukhopadhyay (U.S. Patent 6,399,448) and Barsan (U.S. Patent 5,942,780)

Claims 1 through 40 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Aronowitz et al. (U.S. Patent 6,033,998) taken with Mukhopadhyay (U.S. Patent 6,399,448) and Barsan (U.S. Patent 5,942,780). Applicants respectfully traverse this rejection, as hereinafter set forth.

Applicants assert that to establish a *prima facie* case of obviousness under 35 U.S.C. § 103 three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Third, the cited prior art reference must teach or suggest all of the claim limitations. Furthermore, the suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on Applicants' disclosure.

After carefully considering the cited prior art, the rejections, and the Examiner's comments, Applicants have amended the claimed invention to clearly distinguish over the cited prior art.

Turning to the cited prior art, the Aronowitz et al. reference teaches or suggests a method of fabricating gate dielectric layer having variable thicknesses and compositions over different regions of a semiconductor wafer. The wafer is exposed to a remote low energy nitrogen plasma in a nitridization process having nitrogen cations which have energies of less than about 35 eV.

The Mukhopadhyay et al. reference teaches or suggests forming a multiple thickness gate oxide layer by implanting nitrogen ions in a first area of a semiconductor substrate while a second area of the substrate is masked for subsequent argon ion implantation.

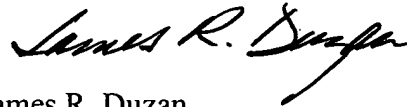
The Barsan et al. reference teaches or suggests an integrated circuit having three different oxide layer thicknesses. Nitrogen implanted at 975° C for 30 seconds is used to retard growth of the oxide layer.

Applicants assert that any combination of the cited prior art Aronowitz et al. reference, the Mukhopadhyay et al. reference, and the Barsan et al. reference fails to establish a *prima facie* case of obviousness under 35 U.S.C. § 103 regarding the claimed inventions of presently amended independent claims 1, 8, 14, 15, 21, 28, 34, and 35 because any combination of the cited prior art Aronowitz et al. reference, the Mukhopadhyay et al. reference, and the Barsan et al. reference fails to teach or suggest all the claim limitations of the claimed inventions. Applicants assert that any combination of the cited prior art Aronowitz et al. reference, the Mukhopadhyay et al. reference, and the Barsan et al. reference fails to teach or suggest the claim limitations of presently amended independent claims 1, 8, 14, 15, 21, 28, 34, and 35 calling for “hardening the at least one exposed area of the oxide layer using a remote plasma nitrogen hardening treatment having a temperature approximately less than 90°C”, “creating at least one hardened area within the oxide layer and at least one nonhardened area within the oxide layer at a temperature approximately less than 90°C”, “hardening the at least one exposed area of the oxide layer using a remote plasma nitrogen hardening treatment having a temperature approximately less than 90°C”, and “conducting a nitrogen hardening treatment having a temperature approximately less than 90°C to create at least one hardened area within the oxide layer having a first thickness and at least one nonhardened area within the oxide layer”. Applicants assert that that any combination of the cited prior art Aronowitz et al. reference, the Mukhopadhyay et al. reference, and the Barsan et al. reference teaches or suggests, at best, a nitrogen hardening process being either a remote low energy nitrogen plasma in a nitridization process having nitrogen cations which have energies of less than about 35 eV or nitrogen implanted at 975° C for 30 seconds is used to retard growth of the oxide layer. Applicants assert that such is not the claimed inventions of presently amended independent claims 1, 8, 14, 15, 21, 28, 34, and 35.

Accordingly, Applicants submit that claims 1 through 40 are clearly allowable over the cited prior art.

Applicants request the allowance of claims 1 through 40 and the case passed for issue.

Respectfully submitted,



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